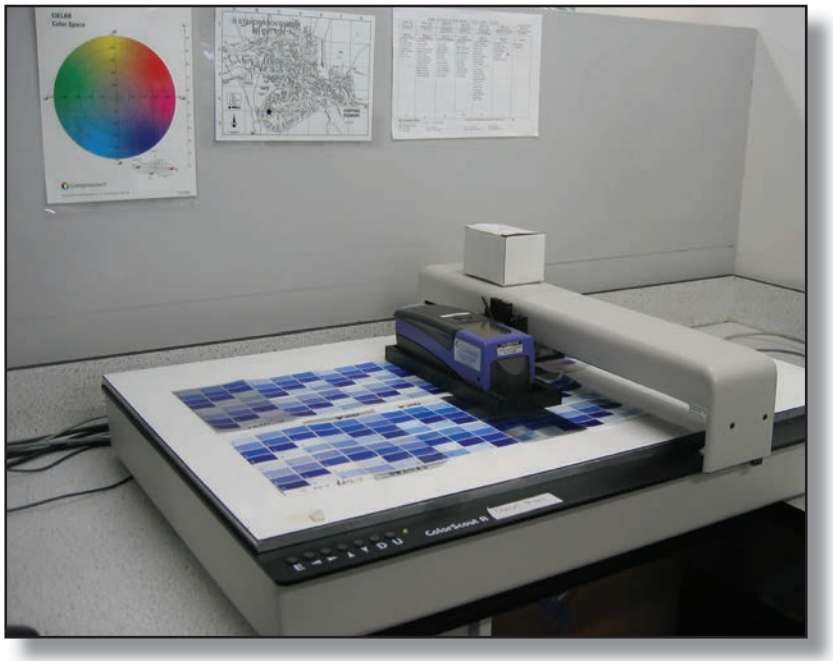


Library building using real ink on real substrate

From Chaos To Control

Transforming The Packaging Industry With Color Management

By Patrice Aurenty

COLOR "DNA"

- Brand owners want a harmonization of brand colors across all substrates, applications and geographies to communicate their brand equity to consumers
- Color management is often a mix of gut feel, operator experience and the somewhat inconsistent use of measurement tools and samples of uncontrolled origin
- To take the guesswork out of color in packaging, every participant in the supply chain must be working from the same, scientific point of reference: the spectral data of a color
- Every color that can be printed can also be measured and its characteristics stored as a spectral curve that acts as the "DNA" of the color
- Total color management in packaging is no longer the elusive Holy Grail—the data and systems that make it a reality are already here

Brand owners want a productive and dependable value chain that remains profitable. In it, consistency is critical for packaging printers, as is being logistically located for ease of supplying the package to the brand owners' plants. Due to the expense of technology, as well as the amount of space and training required to operate equipment, color communicated from the brand's designers was traditionally handled by experts within the value chain. Today, that's changing.

Brand owners want a harmonization of brand colors across all substrates, applications and geographies to communicate their brand equity to consumers worldwide, however, this is very difficult due to regulatory issues, logistics and economics all being managed cohesively.

In 2005, GISTICS, a think tank devoted to customer engagement and content transformation, reported that as many as 73,507 daily interactions took place per product launch, creating chaos and confusion. In 2003, the Food & Drug Administration reported it took 12 months to launch a stock keeping unit (SKU) from design to shelf, costing an average of

$6,700. Due to the color getting lost in translation, an additional 40 percent to 70 percent of costs was added just for rework.

In the packaging industry, regardless of the vertical market, the same business issues float to the surface in most discussions with brand owners and their suppliers. Brand consistency across formats, substrates and geographies is a business-critical objective, tied in with the desire to streamline processes, introduce efficiencies where possible, manage cost by eliminating waste and accelerate time to market.

CORRECT COLOR

Without a doubt, color inaccuracy and inconsistency can be a major cause of delays and bottlenecks in the process. The universe of different individuals involved in reviewing and approving color for a particular job can be vast and geographically disparate, making it hard to communicate effectively and get a grip on something as slippery as "correct color."

Of course, the packaging community has taken steps to take out the guesswork around color. In the field of process color, that has mainly been a question of introducing and enforcing standards such as ISO for the participants in the supply chain to adhere to.

The difference: Colors are created by mixing on the press rather than pre-mixing (as a spot color). Here the requirement is for the ink manufacturer to produce inks to the color specification set that meets the standards for the appropriate printing technology in ISO2846.

Then the converter must set up and control the press in line with ISO12647 and profile the press, so that the color created from it is measurable and predictable. This enables the creation of a good quality and consistent color image that matches the original brand owner design.

73,507
Daily interactions per product launch

12 Months
Time to launch SKU design to shelf

$6,700
Average cost of launch

40%-70%
Rework cost added to each launch due to color getting lost in translation

Same ink on different substrates

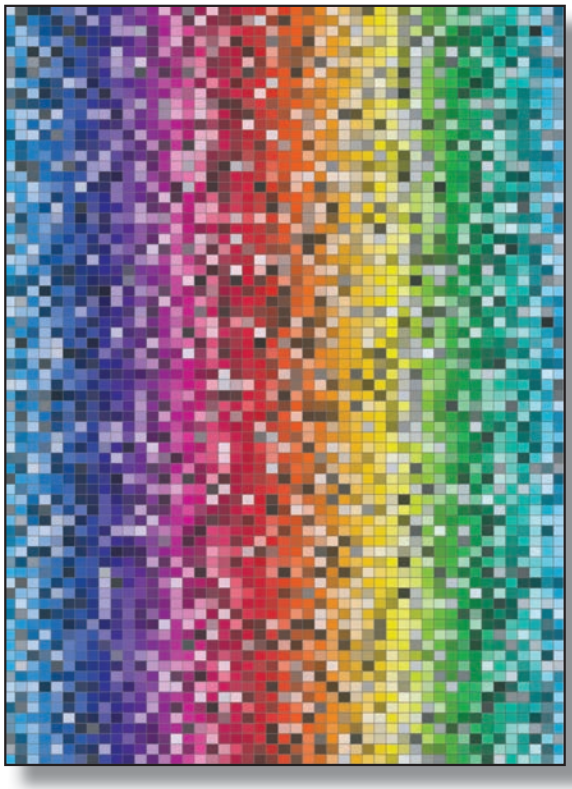
CLOUD-BASED PACKAGE DEVELOPMENT

- **Brand Owners** specify the right color digitally
- **Designers** create the art file using that exact same color signature
- **Prepress Technicians** adapt the file to the specific printer configuration based on that same color spectral curve
- **Ink Manufacturers** match spectrally the right ink to that digital color specification
- **Printers** ultimately reproduce the color on the final product and control color quality by comparing directly to the original color spectral curves, as specified by the brand owner
- **Everyone** works from the precise and unique color definition stored on the cloud

Where spot colors are concerned—and that's often—a key consideration is product- or brand-specific color palettes. Here, the Pantone book remains the default reference for spot color, and in practice, "color management" is often a mix of gut feel, operator experience and the somewhat inconsistent use of measurement tools and samples of uncontrolled origin. This mix is representing the standard where the Pantone guide is unavailable or not specified in the first instance.

When trying to map color management processes in many packaging supply chains today, the picture is pretty chaotic, with inter-communication going in many directions, and often around in loops of approval and re-approval.

It's a recipe for error, inefficiency and excess cost.



An example of a typical color management color palette

EXACT SPECIFICATIONS

Of course, there are readily available software tools for color management, but the challenge remains that they are often deployed inconsistently by individual links in the supply chain, looking more like disconnected islands of solutions than an industry standard reference.

What is more, they may be supplied by small entrepreneurial software developers with good technical credentials, but without the infrastructure and expertise to support the deployment of products across large global companies and multiple disciplines (design, prepress, converter, etc.).

While color management software might remedy the problem at one site, it fails to address the true issue. In order to take the guesswork out of color in packaging, every participant in the supply chain must be working from the same, scientific point of reference: the spectral data of a color.

Happily, there is a remedy for the chaos and the prize is worth having. Far greater efficiency, streamlined product delivery, and optimal color accuracy and consistency across different packaging types, and from country to country.

Color is not subjective: Every color that can be printed can also be measured, and its characteristics stored as a spectral curve that acts as the "DNA" of the color and serves as an exact specification for further reproduction.

There is a supporting system that enables printers to reproduce any color as faithfully and efficiently as possible, whether on paper, board, film, plastic or any other substrate that can be thought of.

HIT THE LIBRARY

The key for such a system is to develop multiple libraries of colors that cover the majority of substrates used in the packaging industry, including corrugated kraft, transparent and white films, laminated films, carton board, paper and labels.

These libraries can capture the spectral curves of any color on the relevant substrate—from a physical print—and hold it in a database in the cloud. It can be referenced at each step of the packaging workflow when a brand owner needs to reproduce that color. The additional key enabler is a digital

color communication tool that can link every part of the packaging workflow and share this color "DNA" with every participant.

The brand owner specifies the right color digitally. The designer creates the design file using that exact same color signature. Prepress adapts the file to the specific printer configuration based on that same color spectral curve. The ink manufacturer matches spectrally the right ink to that digital color specification. The printer ultimately reproduces the color on the final product. He/she controls color quality by comparing directly to the original color spectral curves, as specified by the brand owner. This closes the loop for a seamless color approval.

DIGITAL LOGIC

Such a system allows everyone to work from the precise and unique color definition stored on the cloud. It enables users to operate seamlessly in a fully digital workflow to produce colors that will match the original specifications established from real colors on real substrates. This tool has the scope to remove the margin for error in color reproduction from one packaging material to another. It will bring about far greater consistency through brand families and across multiple territories where substrates are often inconsistent.

However, the key to true color management is to deploy this science right through a particular packaging production workflow by ensuring that all participants in the process are working, communicating and ultimately printing with the same color data.

This type of solution completely overturns old color management practices by delivering significant, quantifiable improvements for brand owner and suppliers alike.

Total color management in packaging is no longer the elusive Holy Grail—the data and the systems that make it a reality are already here.

The packaging supply chain has actively embraced the potential of digital technology in so many other areas of the workflow, but color somehow remains a magical element which too many packaging printers still prefer to leave to visual evaluation by "experts"—with a heavy cost to all parties.

By applying logic and science to the magic, digital color management can give the power to answer the prayers of brand owners. ■

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Sun Chemical is the preferred partner for ink supply and a key contributor to the PantoneLIVE technology, a cloud-based color management solution from X-Rite/Pantone that enables brand owners to accurately communicate colors across a packaging supply chain.